

Study on the effectiveness of online classes for undergraduate medical and dental students of Gandaki Medical College during COVID 19 pandemic period in Nepal

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ABSTRACT

Introduction: Pandemic situation of COVID 19 had an impact on medical education globally leading to cancellation of lectures, laboratory exercises, clinical postings and exams. To continue with the academic program, the online classes are started in different academic streams in large scale. This came with challenges and new learning opportunities for medical students and potential to adopt some changes. The objective of this study is to find out the effectiveness of online classes for medical and dental students of Gandaki Medical College (GMC) during COVID 19 pandemic period in Nepal with questionnaire based survey distributed to the students attending the online classes.

Materials and Method: This is a descriptive cross sectional questionnaire based online survey. The questionnaires were distributed to the undergraduate medical and dental students of GMC, Pokhara, Nepal.

Result: Amongst the students who responded, majority 205(98.1%) were attending online classes. The device used by most of the student to attend the classes was smart phone 156(74.6%). The strength of internet of the students was good in 41 (19.6%) and satisfactory in 99 (47.40%). The internet was disturbed by electricity cut down as responded by 66(31.6%) students. Almost 140(67%) of the respondents rated the online classes were interactive and 124(59.33%) rated the classes were not disturbing. Despite the classes being interactive and non-disturbing, 162(77.51%) of respondents rated that the online classes were not effective. The online classes with one to 51 number of students showed good interactions as compared to classes with 51 to 100 number of students ($p < 0.01$). There was no differences seen in the effectiveness in online classes between these medical and dental students ($p = 0.414$).

Conclusion: Good numbers of students had participated in online classes in medical and dental streams at GMC. The students faced problems in internet connectivity due to electricity cut down. The online classes were not that effective as class room classes. In country like Nepal, various factors affecting the online education should be looked upon to make the online learning effective.

KEY WORDS: Effectiveness, medical education, online classes

INTRODUCTION

Online class can be defined as a course conducted over internet through a learning management system in which students can view their course syllabus and academic progress, as well as communicate with batch mates and the class facilitator.¹ COVID 19 had an impact on medical education globally leading to cancellation of lectures, laboratory exercises, clinical postings and exams.² Online classes are not popular in

Nepal amongst undergraduate health care professional students. With the COVID 19 pandemic situation, considering the social distancing the traditional class room classes are closed in Nepal. To continue with the academic program, online classes are started in different academic streams in large scale. We also started with online classes for medical and dental students at Gandaki Medical College (GMC), for the theoretical portion of the curriculum. This came with

challenges to the medical education, new learning opportunities for medical students and potential to adopt some changes.³

The use of e-learning via the internet has steadily increased amongst health care professionals worldwide. Many studies have been conducted to study the effectiveness of e-learning globally, which has shown some positive effects of e-learning as compared with the tradition learning.⁴⁻⁶

During this COVID 19 pandemic situation, online classes for health care professionals are running steadily and in larger extent. In Gandaki Medical College, WiFi facilities and computer with internet facilities has been set for faculties to conduct the online classes if they wish to take from the institute. This study aims to find out the effectiveness of online classes for medical and dental students of GMC during COVID 19 pandemic period in Nepal with a survey with questionnaires distributed to the students attending the online classes. From this study, we expect to make some guidelines to improve the online classes being conducted to make the sessions more students oriented and effective. It can also suggest if the online classes can be continued even after the COVID 19 pandemic is over and we are back to our normal schedule.

MATERIALS AND METHOD

This is a descriptive cross sectional questionnaire based online survey. The duration of study was from June 2020 to July 2020. The questionnaire was prepared on Google form. The questionnaire were distributed to the undergraduate medical and dental students of Gandaki Medical College (GMC), Pokhara, Nepal through email or viber or facebook messenger whichever feasible. The sample size was calculated by considering 70% of students rating online education as effective.⁷ The formula Z^2pq/L^2 was used, where Z is 95% of confidence interval which is 1.96, p is prevalence which was assumed to be 70% considering 70% of positive response, q was taken as 1-p, L is permissive error which was taken as 10% of prevalence. The sample came to be 165. Amplifying the sample size by 10% for processing errors and another 10% for non-response errors, the final sample size was 198. The contact details of the students were collected from the administration of the college. The questionnaire for the survey was framed by the principal investigator. The validity of the questionnaire was verified by pre-testing

the questionnaire and reviewing by two groups. The reviewers in group I were DP and ND, who are familiar taking online classes to these groups of students. The reviewers in group II were IP and JR who are experts on question construction. The questionnaire was pretested randomly amongst 10% of the total sample size which was 20 students. After receiving the feedbacks from the pre-test and groups of experts, the questionnaires were modified. The questionnaire were sent to all students presently studying Bachelor of Medicine Bachelor of Surgery (MBBS) and Bachelor of Dental Surgery (BDS) at GMC, which is 551 students, we expected to receive the required number of responses.

The questionnaires were collected and the responses were entered on MS Excel 2016 and SPSS 16.0 statistical program (SPSS, Inc., Chicago, IL). The percentages of the responses were calculated. Chi squared test was applied between the MBBS and BDS students and classes with different number of students to see variation in responses. Level of significance was set at $p < 0.05$.

RESULT

The responses were received from 209 students; 135 (64.6%) from MBBS and 74(35.4%) from BDS program; 80 (38.3%) males and 129(61.7%) females. The responses received were from first years 46(22%), second year 49(23.4%), third year 60(28.7%), fourth year 32(15.3%) and fifth year 22(10.5%). Only few number of students 22(10.50%) had an experience of online classes before the COVID 19 pandemic situation. Amongst the students who responded majority 205(98.1%) of them were attending online classes and most of them were from Kaski district 75(35.9%) and Kathmandu 31(14.8%). Majority of the responders 112(53.6%) received orientation for the online classes from the college, others were orientated by teaching faculties 43(20.6%), friends 19(9.1%) and few 35(16.7%) started taking online classes without orientation for the online teaching system. The online platform being used by all the responders to attend the online classes was Zoom. The devices used to attend the online classes were smart phones 156(74.6%), laptops 102(48.8%), tablets 10(4.8%) and desk tops 2(1%) with multiple responses. Majority of the students 180(86.1%) used WiFi. The strength of internet as rated by the students were good in 41 (19.6%) and satisfactory in 99 (47.40%). The internet was disturbed by electricity cut down in 66(31.6%) of responders. The classes were hosted

either by teacher 131(62.7%) or class representative 65(31.1%) or institutional information technology personnel 101(48.3%), students had multiple responses or this question. Out of the total responders 152(72.7%) said the online assignment were assigned and the assignments were submitted through email 82(39.20%). A total of 140(67%) respondents said the online classes were interactive and 124(59.33%) said the classes were not disturbing. Despite the classes being interactive and non disturbing, 162(77.51%) of respondents rated that the online classes were not effective (Table 1 and 2). Majority of students 160(76.6%) rated the level of understanding of online classes as moderate, 43(20.6%) rated as minimum and 6(2.9%) rated as maximum. A total of 122(58.4%) suggested that the teachers need training on how to take online classes. During the online classes, the students take screenshot 135 (64.60%) of the slides being taught, 77(36.80%) listen only and 21(10%) record the classes. Majority of the responders 165(78.9%) suggested that they need

revision of online classes once they are back to regular classroom classes after the pandemic situation and only few 57(27.30%) suggested to continue the online classes even after the pandemic situation comes under control. The comparison of distractions, effectiveness of online classes and interaction in online classes was done amongst classes with one to 50 and 51 to 100 number of students in order to see if the number of students affects these variables (Table 1 and 2). It showed that the number of students did not affect the distractions in online classes and effectiveness of online classes($p=0.638$). The online classes with one to 51 number of students showed good interactions as compared to classes with 51 to 100 number of students ($p<0.01$). Similar comparison was done between MBBS and BDS students to see any differences in effectiveness of online classes (Table 3). There was no differences seen in the effectiveness in online classes between these two streams ($p=0.414$).

Table 1: Comparison of distractions and effectiveness in online classes with groups with different number of students

Number of Students	Total N(%)	Distractions		P value	Effectiveness		P value
		Distracting N(%)	Non Distracting N(%)		Effective N(%)	Non-Effective N(%)	
1-50	74(35.41)	27(36.49)	47(63.51)	0.362	18(24.32)	56(75.68)	0.638
51-100	135(64.59)	58(42.96)	77(57.04)		29(21.48)	106(78.52)	
Total	209(100)	85(40.67)	124(59.33)		47(22.49)	162(77.51)	

Table 2: Comparison of interactions in online classes with groups with different number of students

Number of Students	Total N(%)	Interactions		P value
		Interactive N(%)	Non Interactive N(%)	
1-50	74(35.41)	63(85.14)	11(14.86)	<0.001*
51-100	135(64.59)	77(57.04)	58(42.96)	
Total	209(100)	140(66.99)	69(33.01)	

*Significant

Table 3: Comparison of effective of online classes between MBBS and BDS students

Program	Total N(%)	Effectiveness		P value
		Effective N(%)	Non-effective N(%)	
MBBS	135(64.59)	28(20.74)	107(79.26)	0.414
BDS	74(35.41)	19(25.68)	55(74.32)	
Total	209(100)	47(22.49)	162(77.51)	

DISCUSSION

In this study, 98.10% of the responded are attending online classes during this pandemic situation. This is relatively high in a developing country like Nepal where only 56% of the total population have access to internet and only 13 % of the schools can run online classes.^{8,9} This comparably large number of attendance in online classes could be attributed to the fact that most of the medical students in Nepal are expected to have smart phones, personal computers and access to internet and most of the students in this survey are from urban areas Kaski (35.90%) and Kathmandu (14.80%). Those students who could not attend the classes were from remote areas of the country having problem to access the internet.¹⁰

A study done amongst Jordanian and Saudi Arabia students and teachers showed that technological factor is one of the instrumental factor in affecting the effectiveness of online education.¹¹ Similar technological problems with connectivity were faced by students of Ghana during online education in a study done by Henaku.¹² In our study, the online classes of 31.60% of students were disturbed by electricity problem and 11.50% of the respondents rated internet connectivity as bad. These technological factors were relatively more in survey done by Subedi et al¹³ in nursing students of Nepal. They reported more than half of the students (63.2%) had disturbances in online classes due to electricity problem and 63.6% due to internet problem. These variations could be attributed to the geographical distribution of the students attending the online classes in these two studies. Similarly the level of understanding of the content covered in the online classes were rated as moderate by 76.6% of respondents which is comparable to in the study of Subedi S et al¹³ which was 64.5%. Only 29% of respondents had maximum level of understating. This could be because the medical education is theoretical, practical and clinical training. During this pandemic period the students are attending only theoretical classes. The lagging of the integration of theoretical, practical and clinical portion of the curriculum could have hampered the level of understanding.

In this survey, 58.4% of the students recommended that the teachers need training on how to take online classes. The teachers of Nepal are trained to traditional class room classes. They maintain attention of the

students by moving around in the podium; maintaining eye contact and encouraging student's participation.¹⁴ The barriers for the online teaching can be minimized if the teachers are trained for online education system. In medical education, it won't be possible to cover the entire curriculum on online basis. The theoretical portion of the curriculum when covered parallel with the practical/ clinical portion will enhance the understanding of the students. Online teaching education if integrated with traditional classroom lectures for selected topics could be beneficial to the students.

This study was limited to a single medical college and only two streams of health education were covered. Similar study can be extended to different medical and dental colleges of Nepal and students of various health education streams could be included to give an overall scenario which will help to make guidelines for the online classes and make it more effective.

CONCLUSION

The study concludes that good number of students were participating in online classes in medical and dental streams at Gandaki Medical College. The students faced problem in internet connectivity due to electricity cut down. The level of understanding during online classes of majority of students was moderate. The students will need revision of some of the topics covered during the online classes once they are back to regular traditional classes.

ACKNOWLEDGEMENT

I would like to acknowledge Dr. Ishwari Sharma Paudel, Professor and Head, Dept. of Community Medicine Gandaki Medical College and Dr. Jyotsna Rimal, Professor and Head, Department of Oral Medicine and Radiology, B.P. Koirala Institute of Health Sciences for validating the survey questionnaire. I would like to remember and thank all the students who participated in this research.

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